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Achievement incentives determine the effects of achievement-motive incongruence on flow experience

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Abstract Previous research has shown that incongruence between implicit and explicit achievement motives impairs flow experience. We examined this relationship in a more differentiated manner by arguing that achievement-motive incongruence only exerts negative effects when individuals act in situations in which achievement incentives are present and arouse conflict between the two motives. In non-achievement situations, no negative effects of achievement-motive incongruence on flow experience are expected. Study 1 and Study 2 showed that participants with incongruent implicit and explicit achievement motives reported less flow in achievement- as compared to non-achievement-oriented sport situations. In Study 3, we experimentally manipulated achievement and non-achievement situations. Again, motive incongruence impaired the experience of flow in achievement but not in non-achievement situations.

Keywords Achievement motive · Motive incongruence · Incentives · Flow experience

Introduction

Motive incongruence refers to the incongruence between a person's implicit and explicit motivational system. Since implicit and explicit motives are associated with different and often incompatible behavioral and affective tendencies (see Brunstein 2008), this incongruence leads to a conflict that is associated with stress (Baumann et al. 2005; Kehr 2004). Subsequently, motive incongruence and the

resulting motive conflict have a negative impact on well-being (Baumann et al. 2005; Brunstein et al. 1998; Kehr 2004; McClelland et al. 1989) as well as flow experience (e.g., Rheinberg 2008). Interestingly, situational factors that moderate this relationship have rarely been considered (for an exception, see Baumann et al. 2005). This is astonishing since motivation psychology assumes that motives only exert an influence on behavior if they are roused by *incentives*. Incentives are defined as situational cues in the environment which are potentially associated with desired goal states and which thus stimulate goal-directed behavior (Beckmann and Heckhausen 2008; McClelland 1985; Schmalt 1996; Schneider and Schmalt 2000). Whether or not a specific situational stimulus is linked to a desired goal state depends on a person's motive. For example, individuals with a high achievement motive will be incited by the opportunity to compete with others (incentive) in order to win a competition, enhance their competence, or feel proud (desired goal states), while individuals with a low achievement motive will not be incited by such situations. Motive-related behavior can therefore be explained as a person (motive) × situation (incentive) interaction (cf. Beckmann and Heckhausen 2008; McClelland 1985).

In the studies presented here, we adopt this person × situation approach. We assume that situational cues (incentives) are necessary for the arousal of implicit and explicit motives and for the provocation of motive conflict in association with motive incongruence. This in turn impairs flow experience, which constitutes an optimal yet sensitive motivational state (Csikszentmihalyi 1990). Without incentives in the environment, a motive conflict lies dormant and the relationship between achievement-motive incongruence and the negative consequences of this incongruence is disconnected. Implicit and explicit achievement motives

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must, for example, be elicited by achievement-related incentives in the environment (e.g., the possibility of comparing one's own performance with a standard of excellence) before they are able to arouse a motive conflict in motive-incongruent individuals and in turn impair their flow experience. The effect of achievement-motive incongruence on flow experience is thus expected to depend on the quality of the achievement incentive in a given situation.

Motive incongruence and its negative effects

Having repeatedly found that different measures of one and the same motive (e.g., achievement motive measured using self-report and TAT) are seldom significantly correlated, McClelland et al. (1989) conclude the existence of two independent motive systems and distinguish between an implicit and an explicit motivational system. They (1989) state that implicit motives are based on affects and are not consciously represented, whereas the explicit motivational system (explicit motives and goals) is based on cognitive evaluations of the self. While implicit motives are developed through early emotional experiences, explicit motives are self-attributes which are shaped by environmental expectancies and demands. Implicit motives predict spontaneous behavioral trends over time, whereas explicit motives are associated with immediate responses to specific situations which are often based on cognitive decisions (cf., McClelland 1980). Alongside these differences, a common feature of implicit and explicit motives is that they are both aroused by incentives signaling the availability of a desired end state. In contrast to implicit motives, which tend to be aroused by affective incentives promising rewarding emotions, such as pride upon mastering a challenging task, explicit motives are elicited by rational incentives including social expectations, demands, and external rewards (McClelland et al. 1989; Spangler 1992).

According to McClelland et al. (1989), incongruence “between implicit and explicit motives [...] certainly leads to trouble” (McClelland et al. 1989, p. 700). This claim has been supported by several empirical studies which have shown that motive incongruence negatively influences emotional well-being (e.g., Brunstein et al. 1998; Brunstein et al. 1999), life satisfaction (Hofer and Chasiotis 2003; Hofer et al. 2006), and physiological well-being (Baumann et al. 2005) (for the negative effects of incongruent motives in a broader sense, see also Kasser and Ryan 1996; Ryan and Deci 2000; Ryan et al. 1999; Sheldon and Elliot 1999).

Common to many explanations of the negative effects of motive incongruence is some form of intrapersonal conflict or stress (Brunstein et al. 1998; McClelland and Jemmott 1980; Kehr 2004; McAdams and Bryant 1987; Schüler et al. 2009). Either a high implicit motive is not satisfied by

behavior which is elicited by a high explicit motive, (e.g., by the personal goals of a person) or a high explicit motive is not supported by the energy which is exerted in connection with a high implicit motive, so that goal attainment requires extra volitional energy and is exhausting. Baumann et al. (2005) assume that both of these types of incongruence between implicit and explicit motives constitute a hidden source of stress (*hidden* in the sense that individuals are not aware of the incongruence of their motives) that results in increased cortisol concentrations and impaired physiological well-being. This assumption is supported by empirical data which reveal that the course of psychosomatic complaints (e.g., headache, stomachache, back pain) is predicted by incongruence between implicit and explicit achievement motives (Baumann et al. 2005). A study by Kehr (2004) provides evidence to suggest that incongruence between implicit and explicit motives leads to incompatible behavioral tendencies that cause intrapersonal conflicts. These conflicts require a high degree of volitional self-control and result in psychological stress that impairs long-term well-being.

More recent studies have analyzed moderators of the relationship between motive incongruence and its negative effects. Langens (2007) demonstrated that *activity inhibition*—conceptualized as the degree of restraint exercised by an individual over emotional and motivational impulses (Langens 2007, p. 49)—moderates the relationship between the congruence of implicit and explicit achievement motives and emotional well-being. The studies conducted by Langens show that, in addition to a corresponding explicit achievement motive, a high implicit achievement motive must also be accompanied by low activity inhibition in order to lead to emotional well-being. Schüler and colleagues (2008) showed that congruence between implicit and explicit affiliation motives is only related to emotional well-being when affiliation-relevant behavior is shown. Finally, Baumann et al. (2005) demonstrated that stressful life events interact with state orientation in predicting well-being and that this relationship is partially mediated by achievement-motive incongruence. These studies suggest that a more detailed analysis of the relationship between motive incongruence and its consequences, including a consideration of potential moderators, would be worthwhile.

Motive incongruence and flow experience

A further variable affected by motive incongruence is flow experience. Flow experience is defined as an “optimal experience” (Csikszentmihalyi and LeFevre 1989) and a “subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself”

(Csikszentmihalyi et al. 2005). Besides this deep involvement in an activity, flow is subjectively experienced as a merging of action and awareness, a high sense of control, and an altered sense of time (Csikszentmihalyi et al. 2005). Since flow experience is associated with positive outcomes such as improved performance (Engeser et al. 2005; Jackson and Roberts 1992) and well-being (Csikszentmihalyi et al. 1993), several studies have examined variables through which it is facilitated and hindered (e.g., Engeser and Rheinberg 2008; Schüller 2007). One important variable which hinders flow experience is motive incongruence. According to Rheinberg (2008), the pursuit of goals that do not correspond to a person's implicit motives is only ostensibly appropriate and “valuable” and “require[s] constant monitoring and volitional control which is of course incompatible with flow” (Rheinberg 2008).

The hypotheses that motive incongruence has negative and motive congruence positive effects on flow experience and that volitional control might be an important variable in this relationship have been supported by empirical work. Clavadetscher (2003), for example, measured implicit and explicit motives among voluntary workers, calculated the difference between the two motive types, and used this motive-incongruence index to predict flow experience. As expected, the higher the participants' motive incongruence, the less flow they experienced in their voluntary work. A study by Engeser (2004) showed that students with incongruent achievement motives were less absorbed in and identified less with their work than those with congruent motives. In line with Kehrs' (2004) considerations, Engeser's study provides evidence that motive incongruence requires volitional self-control which is assumed to hinder flow experience.

Present research

The present research picks up on the findings concerning the negative effects of motive incongruence on flow experience reported above. It extends previous research by suggesting that the incentive quality of a situation functions as a moderator of these negative effects. This suggestion follows a simple rationale: If motive incongruence impairs flow by evoking motive conflicts that require volitional self-control, then the negative effects of motive incongruence should only occur in situations in which the implicit or explicit motive (and in turn the motive conflict) is aroused by motive-relevant incentives. In situations that do not provide motive-relevant incentives, no motive conflict will be aroused and no impairment of flow experience is expected. We examined this assumption based on the example of the achievement motive, which is defined as recurrent concern with surpassing standards of excellence (McClelland et al. 1953). Incentives which are able to

arouse the achievement motive include opportunities to measure one's own performance (in order to make comparisons with a standard of excellence) based, for example, on realistic feedback on one's competences and progress. The excellence standard can be internal (e.g., to run 100 m faster than before) or external (to run 100 m faster than others) (McClelland 1985). We hypothesized that the relationship between achievement-motive incongruence and impairment of flow experience is moderated by the degree of achievement incentives in a situation. Individuals with incongruent achievement motives are expected to experience less flow in achievement as compared with non-achievement situations. In contrast to high motive-incongruent participants who are negatively affected by achievement situations, individuals with low motive incongruence were hypothesized to benefit from such situations: According to Csikszentmihalyi (1990; Csikszentmihalyi et al. 2005) achievement settings (characterized, for example, by a high challenge, clear goals, and immediate feedback) generally facilitate the experience of flow. This should be true for individuals without a motive conflict (low motive incongruence). To summarize the theoretical considerations in statistical terms, we expected to find an interaction between motive incongruence (high versus low) and the achievement character of the situation (achievement versus non-achievement), with high incongruent participants experiencing less flow and low incongruent participants more flow in achievement than in non-achievement situations.

Three studies were conducted to test the assumed motive incongruence \times achievement incentive effect. In order to demonstrate the generalizability of the effect, we employed different samples and different domains. Study 1 examined the effect in badminton players and Study 2 in fitness athletes. Study 3 was conducted with a student sample in an academic learning context. In order to show the robustness of the assumed moderator effect across a variety of empirical methods, Study 1 was designed as a correlational cross-sectional study, Study 2 as a correlational longitudinal study, and Study 3 as an experimental laboratory study. In Studies 1 and 2, participants naturally found themselves in achievement and non-achievement situations, whereas participants in Study 3 were randomly assigned to an experimental achievement or non-achievement condition.

Study 1

In Study 1, we compared badminton players from clubs which competed in badminton competitions (high degree of achievement incentives) with players from clubs which did not compete in competitions (low degree of achievement

incentives). Badminton clubs were classified as constituting an achievement situation when club members regularly took part in matches, compared their performance with one another, and used ranking lists to demonstrate losses and victories. We classified badminton clubs as a non-achievement situation when club members did not take part in matches with other clubs and when member recruitment placed particular emphasis on aspects of fun and the social atmosphere of the club. As detailed above, the achievement incentives in the achievement-oriented sport setting were expected to evoke motive conflicts within participants with incongruent achievement motives and in turn lead to an impairment of flow experience, whereas the non-achievement sport setting was hypothesized to have no effect on achievement motive conflicts and ensuing negative effects. For individuals with low achievement-motive incongruence, achievement situations were expected to facilitate flow more strongly than non-achievement situations.

On account of increased reliability and validity, it is recommended that flow is directly measured during the performance of an activity (Rheinberg 2008; Csikszentmihalyi and Larson 1987; Csikszentmihalyi and LeFevre 1989) rather than retrospectively. We accordingly interrupted badminton players during their playing and questioned them regarding their current flow experience.

Method study 1

Participants and procedure

A total of 127 badminton players (83 male) with a mean age of 21.55 years ($SD = 10.12$) volunteered to participate in the study. They were members of either achievement-oriented badminton clubs ($N = 76$) or recreation-oriented badminton clubs ($N = 51$). Members of achievement-oriented clubs regularly took part in matches, while members of recreation-oriented clubs played for fun and recreation. Participants were invited to take part in a study on “Experiences in badminton” and filled in the motive measures prior to a regular badminton session. After 30 min of playing, participants were interrupted and asked to complete the flow measure.

Measures

In order to measure achievement-motive incongruence, measures of both implicit and explicit achievement motives were required. We measured *implicit achievement motives* using the Multi-Motive-Grid (MMG; Sokolowski et al. 2000). The MMG is a semi-projective measure combining features of the TAT and questionnaire

measures of motives. Analogous to the projective technique of the TAT, the MMG presents 14 ambiguous pictures which represent situations arousing the implicit achievement, affiliation, and power motives. The pictures are accompanied by a set of statements which represent typical emotions, cognitions, and instrumental actions (e.g., for achievement: feeling good about one’s competence, feeling confident about succeeding at this task etc.) and which are rated by the participants according to their degree of correspondence with the picture. The MMG thus combines the advantage of projective measures by using pictures that stimulate non-conscious motives with the advantage of self-reports (e.g., objective and easy measurement). Theoretical arguments and empirical evidence suggest that the MMG measures implicit motives (for a review, see Kehr 2004). Correlations between MMG motives and explicit motives have, for instance, been found to be low and it has been shown that the MMG does not measure self-ascriptions with respect to one’s motives and that it predicts task enjoyment and intrinsic motivation (see Sokolowski et al. 2000), both of which are theoretically associated with implicit motives (Deci and Ryan 2000). The validity of the MMG has been repeatedly demonstrated (e.g., Gable 2006; Kehr 2004; Langens and Schmalt 2002; Puca and Schmalt 1999; Schüler 2007). For example, the need for achievement, as assessed by the MMG, predicts performance in achievement contexts (Puca and Schmalt 1999), the power motive is associated with leadership success, and the affiliation motive predicts affiliation behavior (Sokolowski et al. 2000). The MMG allows assessment of a hope and a fear component of implicit motives (e.g., hope-of-success and fear-of-failure). Since our research question addresses the hope component of the achievement motive, we only report the hope-of-success score. This score was computed by summing the number of hope-of-success statements with which participants agreed across all pictures ($M = 7.54$, $SD = 2.66$, Cronbach’s $\alpha = .72$).

The *explicit achievement motive* was assessed using the achievement scale of the German version of the Personality Research Form (Jackson 1984; German Version by Stumpf et al. 1985). The scale comprises 12 statements (e.g., “My goal is to do at least a little bit more than anyone else has done before”) with which participants can either agree or which they can reject. After recoding items, an explicit achievement-motive index was computed by summing the items with which the participant had agreed ($M = 10.23$, $SD = 2.87$, $\alpha = .67$). In accordance with typical findings (e.g., McClelland et al. 1989), implicit and explicit achievement motives were not significantly related, $r = .06$, *ns*.

We computed a *motive-incongruence index* by calculating the absolute difference between the standardized

MMG hope-of-success score and the standardized PRF achievement-motive score. Higher motive incongruence scores thus indicate higher incongruence between implicit and explicit achievement motives. Previous research has demonstrated high validity of motive-incongruence scores (e.g., Baumann et al. 2005; Clavadetscher 2003; Kehr 2004; Schüler et al. 2009; for similar self-discrepancy measures, see for example Boldero and Francis 2000; Brunstein et al. 1998; Higgins 1998). A motive-incongruence score makes theoretical sense when the phenomenon of motive incongruence itself is subject to examination, that is, when the assumption is made that both types of motive incongruence (a high explicit motive combined with a low implicit motive as well as a high implicit motive combined with a low explicit motive) cause intrapersonal motive conflicts that result in impaired physiological and subjective well-being (for a similar line of reasoning, see Baumann et al. 2005; Kehr 2004). Further advantages of difference scores have been discussed by Kehr (2004; see also Edwards 1994 and Kristof 1996 for advantages and disadvantages of difference scores). He argues that discrepancy scores are relatively unobtrusive; the intention of the research at hand remains unclear to participants and the probability of demand effects or a consistency bias is thus reduced. Furthermore, using discrepancy scores would seem intuitively compelling because they directly address the present research question in addition to being easy to illustrate and interpret. Furthermore, studies by Baumann et al. (2005) and Kehr (2004) have shown that measures of motive incongruence based on difference scores are equally as predictive of negative outcomes (e.g., impairment of well-being) as incongruence measures that are based on other statistical methods (e.g., Brunstein et al. 1998; Hofer and Chasiotis 2003). Nonetheless, while the motive-incongruence score appears to represent the most appropriate method for the purposes of the present research, information regarding the directionality of effects may be of interest for related research questions and additional analyses with separate implicit and explicit motive scores are thus presented.

We assessed *flow experience* using the Flow Short Scale (Rheinberg et al. 2003) which has been successfully validated in studies using the experience sampling method (Rheinberg et al. 2007) and in studies based on experimental as well as correlational designs (see Engeser and Rheinberg 2008; Rheinberg et al. 2003; Schüler 2007). The scale comprises 10 items (e.g., I am completely lost in thought; My mind is completely clear) which are rated by participants on a seven-point scale (1: no agreement to 7: full agreement) according to their degree of agreement with the statements. A mean flow score was computed (Cronbach's $\alpha = .78$).

Results study 1

Preliminary analyses, descriptive statistics, and inter-correlations

Exploratory analyses showed that neither gender nor age of the participants had a significant impact on the results reported below. If participants within the achievement-oriented sport setting were to have a stronger achievement motive than those within the non-achievement sport setting, motive dispositions and incentive conditions would be confounded. In order to rule out this possibility, mean motive dispositions were compared across the two sport groups using *t*-tests for independent samples. The groups differed neither with respect to their implicit achievement motives ($T(125) = 1.37$, ns; $M_{\text{achievement}} = 7.28$, $SD = 2.57$; $M_{\text{non-achievement}} = 7.93$, $SD = 2.75$) nor in terms of their explicit achievement motive ($T(125) = .52$, ns; $M_{\text{achievement}} = 10.12$, $SD = 2.90$; $M_{\text{non-achievement}} = 10.39$, $SD = 2.86$).

Achievement-motive incongruence ($M = 1.09$, $SD = .82$) was marginally related to flow experience ($M = 4.64$, $SD = .89$), $r = -.18$, $p < .05$.

Moderation analysis

In order to test the moderator hypothesis, an ANOVA was conducted with flow as the dependent variable and motive incongruence (low versus high) and achievement-incentive quality of the situation (achievement versus non-achievement) as between-subject factors. No main effects of motive incongruence ($F(1, 127) = .01$, $p > .90$) or incentive quality ($F(1, 127) = .59$, $p > .40$) were found. As hypothesized, the interaction between achievement-motive incongruence and achievement incentive was the only significant predictor of flow experience, $F(1, 127) = 7.57$, $p < .01$. The interaction pattern is illustrated in Fig. 1. Post-hoc tests showed that high motive-incongruent participants reported significantly less flow in achievement ($M = 4.38$, $SD = .96$) as compared with non-achievement situations ($M = 4.94$, $SD = .93$), $F(1, 62) = 5.11$, $p < .05$. Low motive-incongruent participants reported more flow in achievement ($M = 4.81$, $SD = .76$) than in non achievement situations ($M = 4.50$, $SD = .84$) at a descriptive level, although this effect failed to reach the level of significance, $F(1, 65) = 2.44$, $p > .10$.

Supplemental analyses

Since the analysis reported above did not differentiate between motive-incongruent participants with a high implicit motive combined with a low explicit motive and those with a high explicit and a low implicit motive, a

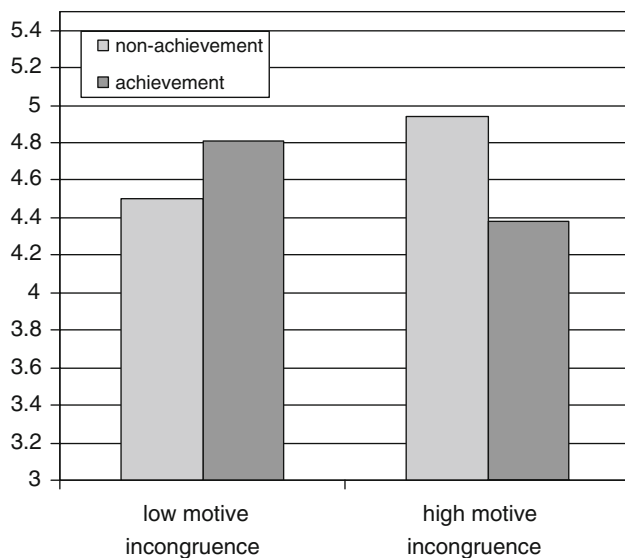


Fig. 1 Illustration of the interaction effect of achievement-motive incongruence and incentive quality of the sport situation (achievement versus non-achievement) on flow experience, Study 1

supplementary 2 (high versus low implicit motive) \times 2 (high versus low explicit motive) \times 2 (achievement versus non-achievement situation) ANOVA was conducted in order to determine whether effects of the two types of high and the two types of low motive incongruence (high implicit–high explicit and low implicit–low explicit motive) were in the same direction. The main effects of implicit motive, explicit motive, and the achievement situation all failed to reach the level of significance. Moreover, none of the two-way interactions (implicit \times explicit, implicit \times achievement situation, explicit \times achievement situation) were significant. However, in accordance with our hypothesis, a marginal three-way interaction effect ($F(1, 127) = 3.02, p < .10$) revealed that motive-incongruent participants reported less flow in achievement as compared with non-achievement situations. This was true for both types of high incongruence, that is, for individuals with a high implicit and a low explicit motive (achievement situation: $M = 4.24, SD = .22$; non achievement: $M = 5.07, SD = .37$) as well as for those with a low implicit and a high explicit motive (achievement situation: $M = 4.69, SD = .20$; non achievement: $M = 4.91, SD = .28$). *T*-tests for independent samples revealed that this difference was significant for high implicit–low explicit participants, $t(21) = 2.25, p < .05$, but not for low implicit–high explicit participants, $t(27) = .52, p > .60$.

For participants with low motive incongruence, no significant differences were found. At a descriptive level, low explicit–low implicit participants reported more flow in achievement ($M = 4.74, SD = .17$) as compared with non-achievement situations ($M = 4.44, SD = .20$; $t(46) = -1.34, p > .10$) and high explicit–high implicit participants

showed no differences in flow experiences in achievement ($M = 4.61, SD = .25$) compared to non-achievement situations ($M = 4.77, SD = .24$; $t(25) = .42, p > .60$).

Brief discussion study 1

The results of Study 1 confirm the moderator hypothesis, showing that participants with high achievement-motive incongruence experienced less flow in achievement as compared with non-achievement sport settings. This strongly supports the prediction that achievement-motive incongruence only exerts negative effects in situations that are characterized by a high degree of achievement incentives. Only pronounced achievement incentives can evoke the motive conflict that is associated with motive incongruence and its negative consequences. The results further confirmed the hypothesis, at least at a descriptive level, that individuals with low achievement-motive incongruence (i.e., individuals for whom no motive conflict was aroused by the achievement-incentive quality of the sport situation) experience greater flow in achievement as compared with non-achievement situations. However, post-hoc tests revealed that this effect was not significant. This indicates that the experience of flow is a complex phenomenon that depends in part on the achievement character of the situation (as our results descriptively demonstrated) but that it is additionally determined by a variety of other variables. Flow is, for example, also influenced by a balance between one's skills and the challenge of the task, the expertise of the person with respect to the activity at hand, and anxiety (Csikszentmihalyi 1990; Jackson et al. 1998; Rheinberg 2008).

A supplemental analysis that took the two types of high and low motive incongruence into account revealed no further information regarding the low motive-incongruent individuals (high implicit–high explicit and low implicit–low explicit). It also showed that the effect of the achievement character of the situation on flow experience was in the same direction for both types of high motive incongruence. However, the analysis also revealed that this effect was stronger for individuals characterized by a high implicit and a low explicit achievement motive than for those with a high explicit and a low implicit achievement motive. Study 2 examined whether this unexpected difference was replicable.

A limitation of Study 1 is that our operationalization of situations with a high and low achievement-incentive quality depended on the objective criterion of whether or not the respective badminton clubs participated in competitive matches. It therefore can not be ruled out that participants who were formally classified as belonging to non-achievement situations nonetheless perceived achievement

incentives beyond comparisons of their own performance with that of others (taking part in matches). In order to support the validity of our classification into achievement versus non-achievement situations, Study 2 also examined the correspondence between our objective classifications and participants' subjective perceptions of achievement incentives within the sport situations.

Study 2

Study 2 extends the preceding study by measuring the long-term effects of achievement-motive incongruence and situational incentives on flow experience. We hypothesized that the interaction between motive incongruence and incentive quality of the sport situation would predict the enhancement of flow experience across a time span of 4 months. Participants in Study 2 registered for sport courses that were classified as either achievement-oriented fitness sport courses (achievement situation) or as recreation-oriented fitness sport courses (non-achievement) on the website of a student sport organization. We additionally measured participants' perceived achievement incentives in the sport situations and expected participants to report more achievement incentives in situations which we classified as achievement situations than non-achievement situations.

Method study 2

Participants and procedure

A total of 112 undergraduate students (88 female) with a mean age of 20.13 years ($SD = 2.83$) participated in the study. They registered for either a recreation-oriented sport course ($N = 69$) or an achievement-oriented sport course ($N = 43$), both of which were offered by a student sport organization at their university. They were recruited at the beginning of a semester for a two-part study on "Sport and Motivation" and received extra course credit for participation. After 3 weeks of participating in their sport courses (T1), they were invited to take part in a web-survey in which implicit and explicit motives were assessed. Participants were further asked to retrospectively rate their flow experiences in the first sessions of their sport courses. At the end of the semester (T2), participants completed a second web-survey including the second flow measure and the perceived-achievement-incentives measure.

Measures

The *achievement-motive-incongruence index* was computed analogously to Study 1. The reliabilities of the hope-of-success scale from the Multi-Motive-Grid (MMG; Sokolowski et al. 2000) and the achievement scale from the Personality Research Form (PRF; Stumpf et al. 1985) were sufficiently high (MMG: $M = 6.93$, $SD = 2.37$; Cronbach's $\alpha = .68$; PRF: $M = 10.24$, $SD = 3.06$; Cronbach's $\alpha = .70$). As expected, the correlation between the hope-of-success score and the PRF achievement score was low ($r = .17$, n.s.). *Flow experience* was again measured using the Flow Short Scale (Rheinberg et al. 2003) (Cronbach's α at T1: .87; α at T2: .88).

In order to measure *perceived achievement incentives*, participants were asked to imagine a typical sport situation from the last semester as vividly as possible and to rate 14 achievement incentives with respect to their importance in the imagined situation (scale ranged from 1: not at all to 5: very much). Example achievement incentives included: "comparing own performance with that of others", "feeling of competence", and "enjoying performance". A mean score was computed across all achievement items. The incentive measure was highly reliable (Cronbach's $\alpha = .93$).

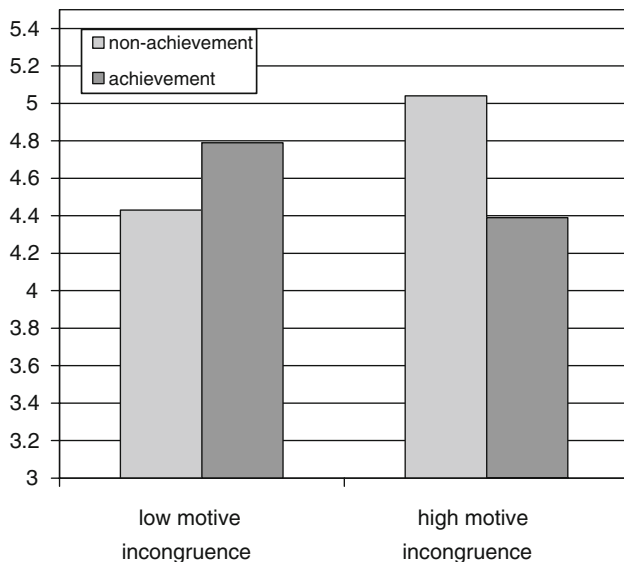
Results study 2

Preliminary analyses, descriptive statistics, and inter-correlations

Preliminary *t*-tests revealed no differences in the implicit and explicit achievement motives of the participants in the two sport groups (implicit motive: $T(110) = -.35$, ns; $M_{\text{achievement}} = 7.00$, $SD = 2.54$; $M_{\text{non-achievement}} = 6.84$, $SD = 2.10$; explicit motive: $T(125) = -.21$, ns; $M_{\text{achievement}} = 10.29$, $SD = 3.25$; $M_{\text{non-achievement}} = 10.16$, $SD = 2.76$). A *t*-test for independent samples showed that participants in the achievement sport situation perceived more achievement incentives ($M = 3.78$, $SD = 0.68$) than participants in the non-achievement sport situation ($M = 3.05$, $SD = 0.86$), $t(99) = -4.72$, $p < .001$, thus confirming that our classification of achievement versus non-achievement sport situations corresponded with participants' subjective perceptions of achievement incentives. Further preliminary analyses showed that neither gender nor age of the participants had a significant impact on the results reported below. As can be seen in Table 1, perceived achievement incentives significantly correlated with flow experience. Additionally, flow experiences at T1 and T2 were associated.

Table 1 Descriptive statistics and correlations (Pearson correlations) among variables of Study 2

		1	2	3	4	<i>M</i>	<i>SD</i>
1	Achievement-motive incongruence	1	—	.07	.06	1.03	.77
2	Perceived achievement incentives		1	.27**	.62***	3.51	.82
3	Flow, T1			1	.44***	4.60	1.0
4	Flow, T2				1	4.60	1.0

** $p < .01$; *** $p < .001$ **Fig. 2** Illustration of the interaction effect of achievement-motive incongruence and incentive quality of the sport situation on the enhancement of flow experience, Study 2

Moderation analysis

In order to test the moderation hypothesis in the framework of a longitudinal design, a 2 (high versus low motive incongruence) \times 2 (achievement versus non-achievement situation) ANOVA which controlled for flow at T1 was conducted with flow experience at T2 as dependent variable. Flow at T1 proved to be a strong predictor of flow at T2, $F(1, 112) = 38.27$, $p < .001$. Neither motive incongruence ($F(1, 112) = .16$, $p > .60$) nor achievement incentive quality ($F(1, 112) = .30$, $p > .50$) predicted flow enhancement. As expected, only the interaction between motive incongruence and incentive quality significantly predicted flow enhancement, $F(1, 112) = 6.18$, $p < .05$. The interaction pattern is illustrated in Fig. 2. In line with Study 1, individuals with high motive incongruence reported significantly less flow enhancement when they were in sport situations characterized by achievement incentives ($M = 4.39$, $SD = .55$) as compared to recreational, non-achievement sport settings ($M = 5.04$,

$SD = .97$), $F(1, 56) = 6.22$, $p < .05$. Again, the flow experience for individuals with low motive incongruence was only stronger in achievement ($M = 4.79$, $SD = .96$) as compared with non-achievement situations, ($M = 4.43$, $SD = .90$) $F(1, 56) = 1.46$, $p > .20$ at a descriptive level.

Supplemental analyses

A supplementary 2 (high versus low implicit motive) \times 2 (high versus low explicit motive) \times 2 (achievement versus non-achievement situation) analysis of variance with flow at T1 as a covariate revealed no significant main effects of implicit motive, explicit motive, or incentive situation and no significant two-way interactions (implicit \times explicit, implicit \times achievement situation, explicit \times achievement situation). As in Study 1, only the implicit motive \times explicit motive \times achievement situation interaction effect reached the level of significance ($F(1, 112) = 10.05$, $p < .01$). Both types of motive incongruence showed less flow in achievement (implicit high–explicit low: $M = 4.30$, $SD = .23$; implicit low–explicit high: $M = 4.46$, $SD = .15$) as compared with non-achievement situations (implicit high/explicit low: $M = 5.14$, $SD = .20$; implicit low/explicit high: $M = 4.68$, $SD = .26$). In line with Study 1, supplemental analyses revealed that this difference was significant for high implicit–low explicit motive individuals, $F(1, 23) = 6.79$, $p < .05$, but not for high explicit–low implicit motive individuals, $F(1, 30) = .15$, $p > .40$. Both types of low motive-incongruent participants reported more flow in achievement (low–low: $M = 4.90$, $SD = .18$; high–high: $M = 4.77$, $SD = .17$) as compared with non-achievement situations (low–low: $M = 4.65$, $SD = .19$; high–high: $M = 4.23$, $SD = .24$). However, these differences once again were not significant (high–high: $F(1, 27) = 3.86$, $p > .10$; low–low: $F(1, 32) = .86$, $p > .30$).

Brief discussion study 2

Study 2 replicated the results of Study 1 using a different sport sample (fitness instead of badminton) and a different method of data collection (web-survey instead of paper-pencil). Furthermore, Study 2 analyzed changes in flow over a period of 4 months. As hypothesized, the negative effect of achievement-motive incongruence on the enhancement of flow experience among fitness athletes was shown to be moderated by the achievement-incentive quality of the situation. Participants with high achievement-motive incongruence reported significantly less flow enhancement in achievement compared to non-achievement sport settings. Again, for participants with low achievement-motive incongruence, this finding was reversed but not significant.

Supplemental analyses again revealed that reactions to achievement and non-achievement situations were similar for individuals with both types of low motive incongruence (low implicit–low explicit and high implicit–high explicit) as well as for those with both types of high motive incongruence (high–low and low–high). However, in line with Study 1, the effect for high implicit–low explicit motive-incongruent individuals was stronger than for high implicit–low explicit motive-incongruent participants, with the former group reporting significantly less flow in achievement compared with non-achievement situations. One explanation for this unexpected difference between the two types of motive incongruence may lie in flow experience—as a kind of intrinsic motivation—being more closely related to implicit as compared with explicit motives (which again are more closely related to extrinsic kinds of motivation) (Rheinberg 2008). As a result of this, flow may react more sensitively in cases of high as compared with low implicit motives. Further studies are required to examine this hypothesis and to determine whether types of motive incongruence have differentially strong effects on intrinsic and extrinsic forms of motivation.

The measurement of subjective perceptions of achievement incentives provided support for our classification of achievement versus non-achievement sport settings, confirming that participants indeed perceive more incentives in the former than the latter type of sport situation. A limitation of both the present study and Study 1 is the self-selected nature of participation in achievement-incentive conditions, with participants choosing whether to participate in achievement- or recreation-oriented sport activities. As a result, the potential role of a third variable (e.g., personality characteristics) which may have accounted for sport-activity selection and for the observed effects can not be ruled out. This alternative explanation of our findings is not supported by our data—no differences were found between achievement and non-achievement sport groups with respect to any of the variables under examination (e.g., implicit and explicit motives, age, and sex) in either Study 1 or Study 2—and would therefore seem improbable. Nonetheless, an experiment is needed to disconfirm this alternative explanation of the observed interaction effect.

Study 3

Study 3 examined the causality of the hypothesized effects using an experimental design. Rather than testing motive-incongruent participants who were already acting in achievement and non-achievement situations, we randomly assigned participants to an experimental achievement or non-achievement condition. The achievement condition was expected to evoke achievement-motive conflict in

participants with high motive incongruence and in turn lead to impaired flow experience, whereas the non-achievement condition was expected to have no influence on motive conflict. In contrast to Studies 1 and 2, Study 3 was designed as a laboratory experiment in which flow was measured while participants vividly imagined (for detailed information, see below) rather than actually acting in situations.

We again hypothesized that the relationship between achievement-motive incongruence and impairment of flow would be moderated by the achievement-incentive character of the situation. More specifically, participants with high incongruence were expected to report less flow in the achievement as compared with the non-achievement situation, while those with low motive incongruence were expected to experience more flow in achievement than in non-achievement situations. As a means of checking whether our manipulation of achievement and non-achievement situations was effective, participants rated the incentive quality of the imagined situations at the end of the experiment.

Method study 3

Participants and procedure

Fifty-six undergraduate students (33 female) with a mean age of 22.5 years ($SD = 3.51$) took part in the experiment in return for course credit. They were invited to attend a laboratory test session (single testing) and first completed the motive measures before being randomly assigned to an achievement ($N = 26$) or a non-achievement condition ($N = 30$) and commencing an imagination task. The imagination task comprised an introductory section which was similar for both experimental groups. It then continued in a different manner for participants in the achievement and those in the non-achievement condition. All participants read the following introduction:

This is a study on fantasy. Please read the beginning of the following story and then fantasize about how the story continues. The end of the story is provided but everything else is open to your imagination. When fantasizing, please imagine the story as vividly as possible and really try to get involved in it. Imagine your behavior, your thoughts, and your emotions in the imagined situation. Please feel free to imagine anything you like. It is important that you feel the story as if it were really happening. The content of the story is not important. After a few minutes, we will interrupt you to measure your experiences on a very general level. You will not be asked about the specific content of your story—it is your fantasy. Enjoy imagining your story.

Here is the beginning of the story: Please imagine that you coincidentally meet an old school friend with whom you spent a lot of time at school. After school you lost touch with one another and you do not know what happened to him/her over the last few years. You arrange to meet up and are really looking forward to catching up on the news in your lives.

Participants in the achievement condition were provided with the following end of the story:

Here is the end of the story: After meeting up with you old friend, you conclude that both you and your friend have been highly successful in your careers and have managed the few difficulties you had very well. You conclude that you can be proud of yourself, that you can easily keep up or even outdo the other school friends you both know, and that your ambitious future plans are very promising.

For participants in the non-achievement condition, the story ended with the two friends having exchanged information on private things and having spent a nice time together.

After 5 min of vividly imagining the situation, participants were briefly interrupted by the experimenter and completed the flow measure. They then continued the imagination task for a further 5 min before completing the manipulation check and being debriefed in detail.

Measures

The *achievement-motive-incongruence index* was computed analogously to the previous studies (MMG: $M = 6.91$, $SD = 2.23$; Cronbach's $\alpha = .60$; PRF: $M = 10.61$, $SD = 2.64$; Cronbach's $\alpha = .64$; correlation MMG and PRF scores: $r = .02$). Again, *flow* was measured using the Flow Short Scale (Rheinberg et al. 2003) and reliability was adequate (Cronbach's $\alpha = .81$).

The *manipulation check* comprised a four-item list of *perceived achievement incentives* (e.g., evaluation of performance; feeling of competence). Using a five-point scale, participants rated the degree to which each statement corresponded to the situation they had imagined (1: not at all–5: very much). A perceived-achievement-incentive index ($\alpha = .68$) was calculated based on participants' mean ratings.

Results study 3

Preliminary analyses, descriptive statistics, and inter-correlations

T-tests revealed no a-priori differences between the two experimental groups with respect to implicit achievement

motives ($T(54) = 1.05$, ns; $M_{\text{achievement}} = 6.23$, $SD = 2.60$; $M_{\text{non-achievement}} = 6.83$, $SD = 1.64$) or explicit achievement motives ($T(54) = 1.23$, ns; $M_{\text{achievement}} = 10.35$, $SD = 2.70$; $M_{\text{non-achievement}} = 11.20$, $SD = 2.51$).

In order to test whether our experimental instructions helped participants to vividly imagine achievement and non-achievement situations, we conducted an independent *t*-test with experimental condition (achievement versus non-achievement) as factor and perceived achievement incentives as dependent variable. Participants in the achievement condition perceived more achievement incentives ($M = 3.35$, $SD = 1.19$) than those in the non-achievement condition ($M = 1.97$, $SD = .86$), $T(54) = 5.02$, $p < .01$. No differences were found between participants in the achievement and those in the non-achievement condition with respect to age or achievement-motive incongruence. Participant's gender and age had no influence on the results reported below.

Pearson correlation analyses revealed that achievement-motive incongruence ($M = 1.01$, $SD = .77$) was not significantly correlated with flow experience ($M = 4.42$, $SD = .98$), $r = -.06$, or perceived achievement incentives ($M = 2.61$, $SD = 1.23$), $r = -.10$. Flow and perceived achievement incentives were also unrelated, $r = .07$.

Moderation analysis

Again, an ANOVA revealed no significant main effect of motive incongruence ($F(1, 56) = 1.55$, $p > .20$) or achievement incentive quality of the situation (condition), $F(1, 56) = .03$, $p > .80$. However, a significant interaction effect of motive incongruence and condition was found, $F(1, 56) = 7.13$, $p < .05$. In line with the hypotheses, Fig. 3 shows that individuals with high motive incongruence reported less flow in the achievement ($M = 3.18$, $SD = 1.50$) than in the non-achievement condition ($M = 4.14$, $SD = 1.21$), whereas individuals with low motive incongruence experienced more flow in the achievement ($M = 4.50$, $SD = 1.01$) as compared to the non-achievement condition ($M = 3.66$, $SD = 1.29$). Post-hoc tests revealed that these differences were marginally significant for both high motive-incongruent ($F(1, 29) = 3.80$, $p < .10$) and low motive-incongruent individuals ($F(1, 27) = 3.36$, $p < .10$).

Supplemental analyses

A 2 (high versus low implicit motive) \times 2 (high versus low explicit motive) \times 2 (achievement versus non-achievement situation) analysis of variance revealed no significant main effects of implicit motive, explicit motive, or incentive situation and no significant two-way interaction effects. The implicit motive (high/low) \times explicit motive

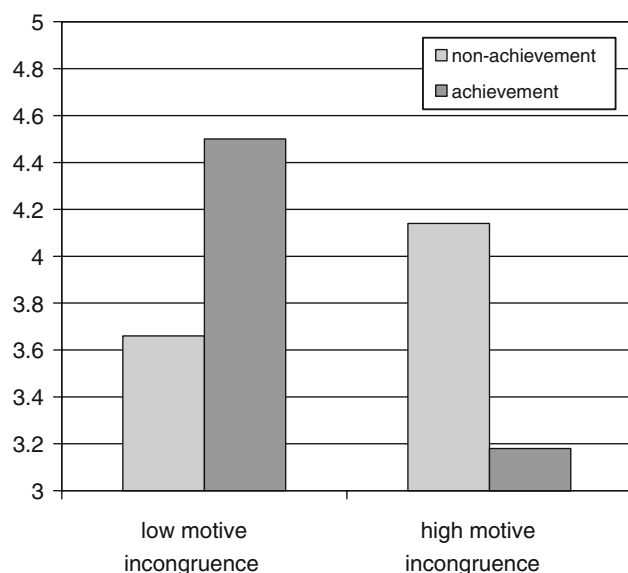


Fig. 3 Illustration of the interaction effect of achievement-motive incongruence and incentive quality of the imagination task on flow experience, Study 3

(high/low) \times incentive situation (achievement versus non-achievement) effect also failed to reach the level of significance, $F(1, 56) = .75, p = .39$.

Brief discussion study 3

The finding that participants perceived more achievement incentives in the achievement compared to the non-achievement situation confirms the effectiveness of our experimental manipulation. Accordingly, imagining an achievement situation and not just being in an achievement-oriented situation (as in Study 2) is associated with higher perceptions of achievement incentives. Most importantly, Study 3 replicated the hypothesized moderator effect using a different method of data collection (experiment rather than field study) as well as a different sample and situation (students in laboratory instead of sports persons in sport settings). Again, participants with high achievement-motive incongruence reported impaired flow experiences in achievement but not in non-achievement situations, even when this situation was experimentally induced. In line with Studies 1 and 2, individuals with low motive incongruence showed a reversed pattern. This time, however, the effect for low motive-incongruent participants was marginally significant and therefore stronger than the effects observed in Study 1 and Study 2. In contrast to the preceding correlation field studies, the experimental character of Study 3 implies a standardization of data collection that resulted in a better control of variables that may also have influenced the experience of flow. This

in turn may account for the stronger effects. Since the supplemental analyses failed to reveal a significant effect, the finding of Study 1 and 2, according to which the influence of incentive situation on flow experience differed for the two types of motive incongruence could not be replicated.

General discussion

The present research proposed that flow experience is best understood by simultaneously considering personal (motive incongruence) and situational factors (incentives). We hypothesized that achievement-motive incongruence does not always impair flow experience but that its negative effects rather depend on the quality of the achievement incentives in a given situation. Three studies demonstrated that achievement-motive incongruence exerts negative effects on flow experience in achievement situations in which motive conflict is aroused. In contrast, achievement-motive incongruence has no effect on flow in situations that are irrelevant to the achievement context (i.e., situations that contain a low degree of achievement incentives) and therefore do not evoke a motive conflict. The studies also showed that participants with low achievement-motive incongruence report more flow in achievement than in non-achievement situations. This corroborates Csikszentmihalyi's (1990; Csikszentmihalyi et al. 2005) assumption that characteristics of achievement situations (e.g., a clear set of achievement goals, immediate feedback regarding the individual's progress) are important conditions of flow. The findings also correspond with other research on intrinsic motivation which argues that the opportunity to experience oneself as competent enhances intrinsic motivation (Deci and Ryan 1985, 2000). However, while the pattern of results for low motive-incongruent individuals was consistently in the same and hypothesized direction for low motive-incongruent individuals in all three studies, the effect was weaker than expected. Further studies are needed to address at least two limitations of the present studies. First, they should control for other important antecedents of flow (besides the achievement character of the situation) that might have influenced flow experience in our studies, such as, for example, the balance between challenge and skill level or anxiety. Second, they should test the effects of achievement-motive incongruence and the achievement character of the situation on a broader range of dependent motivational variables. It would be interesting, for example, to examine whether the two different types of high motive incongruence differentially influence implicit and explicit forms of motivation.

Taking another perspective on the data, the results additionally revealed that even individuals with high

achievement-motive incongruence are able to experience flow when acting in non-achievement-related domains. Rather than avoiding situations which may evoke motive conflicts, however, it is better to reduce motive incongruence itself. Schultheiss and Brunstein (1999) propose a method with which explicit goals and implicit motives can be drawn closer together. They show that the gap between emotion-based implicit motives and cognition-based explicit motives can be bridged by translating the cognitive goal into an affective mode. They suggest that *goal imagery*—the “perception-like mental representation of the pursuit and attainment of a goal” (Schultheiss and Brunstein 1999, p. 5)—is an appropriate method for linking together the two motivational systems. Vividly imagining the pursuit of a goal, for example, imagining how it would feel to intensively work on a challenging achievement task, translates the cognitive goal into an affective representation which can be “read” by the implicit motive system (Schultheiss and Brunstein 1999). Correspondence of the goal with an implicit motive can then be evaluated and the right goal can be chosen.

The present research focused on the effect of motive incongruence on flow experience in the achievement domain. However, the assumed relationship between motive incongruence and incentives should also apply to other kinds of motive incongruence (e.g., affiliation- or power-motive incongruence) as well as other outcome variables (e.g., well-being). An affiliation- or power-relevant situation is expected to evoke a conflict between the corresponding implicit and explicit motivational systems and give rise to associated negative consequences. In contrast, affiliation- and power-motive incongruence are not expected to unfold their negative effects in achievement or other non-affiliation and non-power situations in which the motive conflict is not aroused. Further studies are required to test the generalizability of the motive incongruence–incentive interaction effect in the domains of affiliation and power motives and to support our hypothesis that person (motive incongruence) \times situation (motive-relevant incentives) interactions must be considered in order to fully understand the effects of motive incongruence.

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